
* INDIANA SINCLAIR-TIMEX USERS NEWSLETTER *

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Editor-Frank Davis

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EDITORIAL

What would I like to see in the year 1988, or should I say, what computer products would it take to get me to buy? If you were asked just what you would like to see hit the Sinclair and Timex-Sinclair market this year ...what would you really want? Few of us give the hardware hacker or software developer any idea what we really want. In order to keep it worthwhile for some people to do this work, many want to make some money off of it, and there is nothing wrong with that. Here is what I would like to see.

I would like to see any and all programs come equipped with the feature that allows you to make multiple copies, if that program allows for hardcopy. This is particularly true of word processors and desk top publishing programs. Not everyone is just looking for camera or copymachine ready single copy. If you want to make a short run on an item and have a good printer, then this is ideal.

Next I would like a means of using more than one cartridge out of the TS2868 cartridge dock. If you have Pro/File on cartridge, Tom Woods Non-Volatile Ram, a dock run Spectrum emulator, OS-64, etc, it sure would be nice just to switch them in and out with a mechanical or software switch. This would save on the wear and tear on the inserting and removing cartridges also. Perhaps this could be brought out the back and a board developed to handle this.

Third, I would like to see more American developed software and hardware for the QL. It appears to me that the majority of programs I have seen available for the QL are not readily useable by someone who just wants to be a QL user. Most of them ask for the user to also be a programmer. (which is great for those of us who like to program, but hard on those who just want to compute). There are few user ready QL programs. It is a great machine to do some Adventure games on, or perhaps develop an Expert System for, and we have yet to get a BBS program for it. I hope I have given someone some ideas.

The following is a letter received for the Group. Anyone interested in responding would be greatly appreciated.

Mr. James T. Crumley
Department of the Army
Drawer "A"

Fort Leavenworth, KS 66027-7140

"I am an incarcerated Timex/Sinclair 2068 user looking for other users to correspond with. Due to limitations imposed by the institutional administration however, I am unable to join outside clubs or groups. Couple this with the fact that I do not, at the present time, have the necessary funds to join such organizations and it makes for a terrible situation for someone trying to learn more about computers.

While I have quite an extensive theoretical background in computer science (I hold a masters degree in computer studies), I have very little actual programming experience due to my current circumstances. I would like to correspond with persons who are knowledgeable in the various languages, other than BASIC, that can be utilized on the T/S 2068. Especially the Hawk Wild implementation of fig-FORTH. I have a copy of this last and cannot seem to get the colon definitions to compile from the tape as the instructions (which are quite sparse) say it should.

I have plenty of time to answer letters and would really like to start a serious correspondence with people who are interested in the Timex/Sinclair computers. I look forward to hearing from you soon."

Sincerely,
James T. Crumley

HOT -Z FOR THE TS1000

Willie Jones just told me that a friend of his, by the name of Scott Plough, was trying to get hold of the program Hot-Z for the TS1000. So far he has had no luck locating it (for that matter when was the last time you saw any ad for Hot-Z for the TS2068 either) and wants the assistance of any and all readers to come to his rescue. Anyone who has a copy for sale, wants to give it away, or perhaps trade for something else please contact Willie Jones with the particulars. He can be reached either by calling 317-897-9225, or by writing to Willie at 10126 E. 33rd St., Indianapolis, Indiana 46236.

This little problem brings up a matter that concerns all of us users of Sinclair and Timex-Sinclair computers. Far too many of our best classic programs have gone into oblivion. Many times the last distributor leaves the business, never making any arrangement for the sales of certain programs. I personally wish that some of these people would either make arrangements for someone else to sell these programs or just plain donate them to public domain. Just because sales were not quite up to what they expected, I would hope that they had enough affinity left for other users to at least give this idea some consideration.

A partial remedy to this would of course be a better exchange of programs between user groups. By this I do mean Public Domain programs. Let us not get carried away to the point that we forget that a programmer and software dealer have a right to expect compensation for their work.

2068 Dock Connector For More Than Games!

As most Sinclair users know, the Timex Command Cartridge port is one of the major features that cannot be found on the British Sinclair Spectrum. This feature alone makes the TS2068 a far superior machine, and this I/O port (See figure below) is quickly becoming the 2068's most versatile feature.

Bottom

A14	1
A12	3
D0	5
D1	7
D2	9
D6	11
D5	13
D3	15
D4	17
IORD	19
RD	21
WR	23
A7	25
A6	27
A5	29
A4	31
BE	33
ROSCS	35



Top

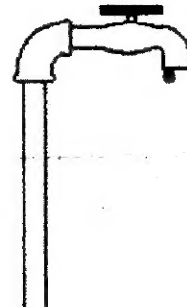
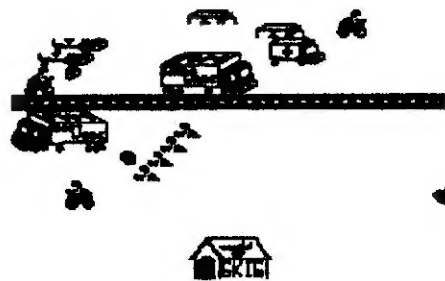
2	+5V
4	A13
6	D7
8	A0
10	A1
12	A2
14	A3
16	A15
18	NREQ
20	A7R
22	M1
24	A8
26	A9
28	A10
30	A11
32	RFSH
34	EXROM
36	GND

TS-2068 DOCK Connector MF88

The dock connector carries through all of the important pin outs from the processor. All of these signals can be found on the rear edge connector. The only difference is that the rear edge connector contains several additional signals (Ear, Mic, etc.). It is also important to note that the locations of the signals are also different. Thus, devices designed for one port connector will not connect to the other.

Currently there are several peripherals available for the 2068 Dock besides just game cartridges. These include printer interfaces, disk operating systems, 64 column screen display ROMs, bare EPROM boards and NOVRAM cards. In addition to this, there is also available a plug in card for the rear edge connector which gives a twin cartridge port so that cards larger than the cartridge size can now be developed.

One of the major advantages of using the TCC is that it allows developers to utilize the 2068's bank switching capabilities with great ease. For example, the Larken Disk system uses a cartridge ROM for its DOS. Upon power up, the 2068 will go out to the TCC to see if there is a cartridge there. If there is, then the 2068, in short, executes the code there. Thus, disk initialization is done, and control is returned to the main memory bank. There is literally no memory used, and programs do not even know that there is a DOS out there until they are told.



FIX THAT DRIP!

View	Move	Ink	Circ	2X
Copy	Copy	Map	Arc	Bold
Spray	Turn	Box	Oval	Ultra
Fill	Big	Str	Line	Ital
Zoom	Small	Fls	Ray	Load
Clis	FlipU	Dur	Box	Save
Undo	Fliph	Inv	Tri	Print
Info	Clear	Grid	Dot	

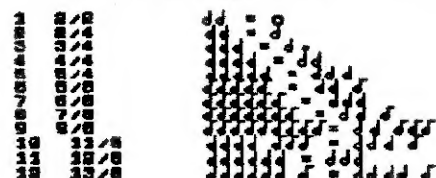
Created by

NovelSoft
A FORMAT FOR THE FUTURE

Bytes: TSARTS.08



(0=dd d=dd d=dd d=dd d=dd)



```

10 BORDER 2: CLS : PRINT "399
400": LOAD "SQUATIMSCR"SCREEN$
15 POKE 23658,8
20 PAUSE 280: CLS : PRINT AT 5
,4;"THESE recipes do NOT begin..

25 PRINT AT 10,4; INK 3;"Steal
one chicken"; INK 0;AT 15,4;"TH
ESE are TEXAS recipes": PAUSE 34
0: CLS
30 PRINT AT 10,5; INK 2;"EASY
PECAN PRALINE REACHMENTS": PAUSE 160: PRI
NT AT 19,0;"Just tidying up unde
r the tree.": INK 9
35 PAUSE 280
40 CLS : PRINT AT 2,14;"EASY";
"1. PECAN PIE";"2. PECAN PRA
LINES";"3. PECAN BRITTLE";"4
. PECAN DIET LOAF";"5. PECAN P
REACHMENTS"
45 INPUT ""CHOOSE BY NUMBER "
;C$
50 IF C$="" THEN GO TO 45
55 LET C=VAL C$: GO TO 100+C
100 CLS : REM PECAN PIE RECIPE
101 PRINT "EASY BUT EXPENSIVE
PECAN PIE-----BEST YOU OWN A SUNN
Y SACK"
105 PRINT ""1+1/8 C. SUGAR";"1
/4 C. BUTTER OR MARGARINE";"1/2
C. WHITE OR DARK KARO SYRUP";"
3 EGGS WELL-BEATEN";"1 C. PECAN
S"
108 PRINT ""MOST TEXANS PREFER
THE DARK KARO"
110 PRINT ""IF USING BOUGHT PIE
CRUST, PAN WILL BE SMALL SO US
E 4 EGGS & 2 C. PECANS & MAKE 2
PIES."
115 PRINT ""BRING SUGAR, SYRUP,
& BUTTER TO BOIL IN SAUCEPAN. C
OO L WELL. BEAT EGGS & ADD TO
MIXTURE; BEATAGAIN; ADD PECANS;
POUR INTO UN-BAKED PIE SHELLS &
BAKE FOR 50' AT 350 DEGREES. COO
L & SLICE."
198 GO SUB 9990
199 GO TO 40
200 CLS : REM PECAN PRALINE REC
IPE
201 PRINT ""PECAN PRALINES--BES
T YOU OWN A CANDY THERMOMETER"
203 PRINT ""FORGET GRANDMA'S IR
ON SKILLET FOR CARAMELIZING SUG
AR--BAKING SODA IS CATALYST."
205 PRINT ""2+1/3 C. SUGAR";"1
/8 tspn. BAKING SODA";"1/3 C. W
HITE KARO SYRUP";"3/4 C. EVAP.
MILK";"1 tspn. VANILLA 3 C.
PECANS"
210 PRINT ""BOIL SUGAR, SYRUP,
SODA, & MILK IN MED. SAUCEPAN, S
TIR CONSTANT-LY TILL 238 DEGREES
, OFF STOVE, STIR IN VANILLA & P
ECANS. DROP BY SPOONFUL ONTO WA
XED PAPER. LET STAND TILL FIRM
---3-4 HRS. STORE IN COVERED CO
NTAINER."
298 GO SUB 9990
299 GO TO 40
300 CLS : REM PECAN BRITTLE
302 PRINT ""PECAN BRITTLE--BEST
BRITTLE BY FAR"
304 PRINT ""2 C. PECANS";"2 C.
SUGAR";"1/2 C. HOT WATER";"1
C. WHITE KARO";"2 tspn.SODA"
306 PRINT ""BRING TO BOIL ALL I
NGREDIENTS EXCEPT SODA. TURN H
EAT TO MED. &CONTINUE TO BOIL 25
-30 MIN. STIROCCASIONALLY. SYRUP
MUST BE DARK& THICK--238 DEGREE
S. OFF HEAT ADD SODA QUICKLY TO
MIX. ZIPPILYPOUR ONTO BUTTERED
COOKIE SHEET.COOL. HARDENS QUICK
LY."

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```

398 GO SUB 9990
399 GO TO 40
400 CLS : REM PECAN DIET LOAF
401 PRINT ""PECAN DIET LOAF--BE
ST YOU CAN DOON PENANCE DAYS"
402 PRINT ""TAKE 1 PECAN-HALF,
SHELLED, ROOMTEMPERATURE, PLAC
E FLAT SIDE DOWN ON CHOPPING B
OARD. WITH SHARP KNIFE SLICE
CROSSWISE TO THE LENGTH OF PECA
N-HALF AS YOU WOULD SLICE A MEAT
LOAF. SLICE THINLY ACROSS THE
GRAIN. PLACE ON UNBUTTERED PLAT
TER. YOU MAY HAVE PORTIONS ALL
DURING THE DAYTILL ENTIRE DIET L
OAF IS CON-SUMED. TWEEZERS A
RE PERMITTED."
408 PAUSE 1500: GO SUB 8000
410 FLASH 0: GO TO 40
500 CLS : PRINT "Calorie coun
ts for pecan pie, pralines, & b
rittle are unknown.";"" I don'
t WANT to know."
503 PAUSE 350: PRINT AT 10,5;"E
ASY PECAN PRALINE REACHMENTS"
505 STOP
8000 CLS : RESTORE : REM 6-PART
UDG OF PECAN DIET LOAF
8002 FOR a=65368 TO 65375: READ
n: POKE a,n: NEXT a
8004 FOR b=65376 TO 65383: READ
n: POKE b,n: NEXT b
8006 FOR c=65384 TO 65391: READ
n: POKE c,n: NEXT c
8008 FOR d=65392 TO 65399: READ
n: POKE d,n: NEXT d
8010 FOR e=65400 TO 65407: READ
n: POKE e,n: NEXT e
8012 FOR f=65408 TO 65415: READ
n: POKE f,n: NEXT f
8021 DATA 128,64,32,16,0,0,0,7
8022 DATA 128,66,36,0,0,0,0,255
8023 DATA 1,2,4,8,0,0,0,128
8024 DATA 14,25,55,111,240,192,2
21,127
8025 DATA 0,0,255,255,1,3,135,25
5
8026 DATA 128,128,128,128,128,25
2,254,255
8110 PAPER 6: FLASH 1: PRINT AT
19,14;"ABC";AT 20,14;"DEF"
8115 PAPER 7: INK 0
8120 FOR U=0 TO PI STEP PI/90: P
LOT 127+127*COS U,0+127*SIN U: N
EXT U
8130 FOR U=0 TO PI STEP PI/90: P
LOT 127+105*COS U,0+105*SIN U: N
EXT U
8150 PRINT AT 1,1;"PECAN DIET LO
AF--ANYWAY YOU SLICE IT, YOU
'RE LEAN FOR A DAY": PAUSE 380
8200 RETURN
9990 REM COPY OR RETURN TO MENU
9991 INPUT "COPY OR RETURN TO MA
IN MENU? C/R?";R$
9992 IF R$="" THEN GO TO 9991
9993 IF R$="C" THEN COPY
9995 RETURN
9997 STOP
9998 SAVE "SQUAU-T" LINE 10: PRI
NT "RE-LOAD ""SQUATIMSCR"" SCREE
N$ ";""GOTO 9999 WHEN READY TO S
AVE": STOP
9999 SAVE "SQUATIMSCR"SCREEN$

```

SERVICING THE WAFADRIVE

Most Wafadrives returned for repair simply require adjustment to bring them within specification and get them working correctly. Some units require replacement of drive units due to failure and some require the addition of an inverter to prevent "crashing" and interference problems - mainly with later issues of Spectrums. The general repair procedure is as follows:

1. Disassemble the unit and visually inspect for signs of damage or abuse. Note the condition of the ribbon cable and connector assembly in particular.

2. If the unit is "unmodified" (ie. has not had C36 removed and an inverter fitted), then this should be carried out:
 - i). Remove C36 by bending the body of the component over and cutting the leads. Take particular care to avoid damaging the adjacent fine PCB tracks. It is recommended that C37, D20 and D21 are also removed.

 - ii). Attach the inverter to the rear of drive unit A by means of a double-sided sticky pad.

 - iii). Connect the violet trailing lead to 0V. A convenient point is the track running between the Centronics and RS-232 connectors at the very rear of the board.

 - iv). Connect the red trailing lead to -12V. The best point is to R33 - at the end nearest R32 on the board.

 - v). Connect the white trailing lead to +5V. The regulator terminal nearest the edge of the board (marked "OUT") is the best place.

 - vi). A capacitor may be fitted to the connector assembly PCB. This should be removed by cutting it out.

3. Connect the Wafadrive to a Spectrum and power the system up. If the normal Sinclair copyright message is not displayed after a second or two, disconnect the power immediately. Check the Wafadrive for short circuits on the address/data busses etc. Solder bridges are unlikely as the units are tested several times in the factory - they are not unknown however. If the screen appears near-normal but with heavy horizontal bar distortion indicative of 50Hz interference, suspect a power supply overload. Check the power supply voltages at the regulator. A component which has failed in this manner will usually be hot to the touch - and may even smoke. Prime suspect is the inverter, temporarily disconnect the red and white wires and see if this restores normality.

4. Initialise the Wafadrive by entering NEW *. If the Wafadrive does not initialise, but the computer appears to function normally otherwise, suspect an open circuit line (check that the PCB tracks around C36/37 etc. are undamaged). Check also the Wafadrive's power supply rails and the EPROM socket. If using an unfamiliar Spectrum, check that the processor is giving out the M1 signal.

5. The drive motors can be started by keying LET 1=IN 1546 (A) or LET 1=IN 5130 (B), and can both be stopped with LET 1=IN 10. Start each drive in turn and clean the heads and motor spindles with a cotton bud. The motor shafts can be checked also for eccentricity by feeling for excessive vibration when cleaning them.

6. Load the speed test program into drive A. If the R/W speed is more than 4% in error, correct it by adjusting the control screw under the motor. Easiest access is gained by removing the drive but it can be adjusted with a specially fabricated "bent screwdriver". If fast forward speeds are low - less than say 30% - the unit can be modified to increase them. 33R resistors are added across R52 and R53 and 1N4148 diodes across R42 and R43 (cathode at the Q2/Q3 end). The process can be repeated with drive B, but it is not necessary to reload the program. Simply enter CAT *"b:", whereupon the report Wafer not inserted will be given. Insert the speed test wafer in drive B then enter RUN.

7. The heads can now be aligned. Insert a 30KHz alignment wafer in drive A and start the motor as described above. Monitor the signal across R18 with a dual beam CRO set to display the differential signal. If a CRO is not available capable of this, a differential amplifier will have to be made and used instead. The hex alignment screw should be adjusted to yield optimum signal amplitude (about 300mV p-p). If the adjustment is "sloppy", the rubber "O" ring under the head retaining flange has probably been over-tightened and distorted. Remove and replace with a new one. When satisfied, lock the screw head with a modest application of thread fixing glue. The procedure can then be repeated for drive B. Inadequate signal amplitude is most often due to bad connection of head cables, failure of U26, U27, L1 or L2.

8. Now insert a wafer which has some data recorded on it in drive A and start the motor. Monitor pin 3 of U3 with a CRO and adjust VR2 to achieve a pulse length of 41.5uS (plus or minus 1uS). In some cases R20 needs to be padded to enable this to be achieved.

9. Remove all wafers and disconnect the power. Inject a 18KHz sine wave signal at 4mV p-p into pins 1 and 2 of U27. Power the system up, switch on drive A motor and monitor the signal at pin 10 of U27 on the CRO. With the timebase at 5uS/div, a pulse will

be seen at the left hand side of the screen together with another roughly central. The central one will usually appear vague - adjust VR1 until it steadies and appears as a single pulse. Without a generator, this test can be done "in the field" using an accurately duplicated wafer instead of the external signal source. Upon completion, power down again and disconnect the signal source.

10. Before re-assembly the Rotronics test program should be executed all the way through. This culminates in the printing of a test record which should be error free.

TESTING THE WAFADRIVE

Most of the Wafadrive's operations can be checked using a simple test procedure in the form of a program on wafer. The ROTRONICS test tape carries out a sequence of checks to simulate the useage a Wafadrive normally experiences in the customer's hands and to highlight some of the known potential problem areas - particularly with respect to mechanical and electrical alignment.

The description of the test procedure that follows refers to the ROTRONICS test program version 2 and the test procedure which will be found accompanying this document.

Preliminary procedures

Before testing commences a "reference" drive unit should be established using traceable standards. Firstly the shafts are honed in the manner described by ENTREPO, checked for run-out and the heads cleaned. The motor speed is then set to precisely 2425 rpm using the BSR adaptor to extract the motor commutator pulses. This equipment should be left connected during the subsequent operations to prevent errors due to speed drift.

Each drive should then have the head aligned in the correct manner - using an ENTREPO serial-numbered alignment wafer and adjusting signal amplitude to a maximum on the CRO.

The phase balance pot (VR1) can then be adjusted for correct relationship between positive and negative peaks by injecting a sine wave signal from the BSR test generator.

Finally the monostable time period is set to 41.5 uSecs (VR2).

To make a copy of the test wafer, insert a blank (16K) wafer in drive A. Insert the test wafer master in drive B then enter:

```
MERGE *"B:"; GO TO 150
```

When the program has loaded it will commence a speed check on drive A and display the time taken to wind the tape from index to index at normal (r/w) speed. Take the average of several passes (use BREAK followed by GO TO 150) all the time ensuring that the indicated speed on the test equipment is still exact and that the test gives consistent results. If not, use another wafer or change the drive.

When this has been achieved, edit line 5020 of the program and set nrt to the correct value for that tape. Then enter:

```
GO TO 9e3
```

Whereupon the test program will be duplicated on the wafer in drive A. When finished, label the wafer and remove the write-protect tab. Repeat if more copies are required.

The test procedure

The test program has been written in BASIC to allow changes to be easily made. More importantly, the program can be stopped at any time using the BREAK key and a test repeated by typing:

GO TO n

Where in general n is equal to the test number multiplied by 10 - eg. GO TO 90 to start the program again at test 9.

bad sector reports cannot be tolerated - they are indicative of misalignment. "Soft errors" can occur for other reasons but they are rare. Repeat the test if in doubt. Only units that can perform all tests without errors occurring are acceptable.

1. The first step is to examine the Wafadrive and the associated manuals and wafers. Check that the package is complete, that the unit has been assembled correctly and that there are no visible signs of damage.

On returned units check head condition, hone the shafts and check for run-out.

2. Next connect the Wafadrive to a 48K Spectrum and plug a ZX Printer (or similar) into the rear of the Wafadrive. Switch on, and assuming that the system powers up correctly, enter:

NEW *

Whereupon the Wafadrive sign-on message should be displayed.

3. Insert the "Spectral Writer" wafer in drive A and enter LOAD *. Check that the program loads correctly - without any bad sector reports. Trouble with loading may be indicative of a misaligned drive or a badly duplicated wafer. Remember that the first thing a customer does with the Wafadrive is to load this program and a failure here does not help the reputation of the product. If there is a problem, try loading the program into the reference drive to determine the cause.

Remove the program wafer, wrap in a polythene bag and replace in the packaging. Reset the system (use a switch or interrupt the power).

4. Insert the test wafer in drive A and enter LOAD * to load the test program which will auto-run. A title message will be displayed when loading is complete and the tests can be started. Since the test program has been duplicated on a standard drive there should be "beeps" indicative of loading errors.

5/6/7/8. These tests check the "wafer present" and "write protect" switches in the drives. Swap the test wafer (which is write-protected) and the blank 64K wafer (which is not) between the drives and ensure that the indicated status is correct.

9. Ensure that the test wafer is back in drive A and that the blank 64K wafer is in drive B (since this is part of the package it must be tested also) before proceeding to this test. Repeat if any faulty sectors are indicated during formatting. If consistent faults are given, try with another wafer in order to isolate whether the problem is due to the wafer or the drive.

10. This test saves then verifies a file on the 64K wafer (actually a copy of the test program) to check save/load on drive B. Again, no bad sectors are permissible.

11. Swap the wafers over such that the test wafer is now in B. The program then checks that the file saved to B can be read back on A and that drive B also loads in the "display" portion of the test program on the reference wafer.

12. At this point a file is saved/verified on the 64K wafer in drive A to check its basic function.

13. The wafers are now swapped again (test wafer in A) and the file saved to A is verified on B to check interchangeability between the drives. It is interesting to note that drive B's directory has to be "sabotaged" (POKE 23778,0 - line 130) to prevent it verifying the sectors it wrote to during test 10.

14. This part of the test checks the printer interfaces. The Wafadrive should be connected to a Centronics compatible printer and an RS-232 terminal or printer. The test messages should appear on these devices and the ZX Printer also.

15. The next phase is the speed checks. First the test wafer is wound one complete pass (index to index) and the time taken to achieve this is displayed - along with the time normally taken on an accurate drive and the error as a percentage of the two. If the error exceeds 5% a warning notice will flash. A machine code subroutine is used to measure the period as BASIC is not accurate enough.

16. The program will continue by checking the time taken to wind the tape in fast forward mode. This is expressed as a percentage of the r/w speed and the figure is nominally +40%. Anything below +25% should be regarded as inadequate although the program will display a warning message if below +40%. Experienced operators may already have a "feel" for the performance of the unit in this respect at this stage since faulty drives are noticeably slower in operation.

17. When the tests on drive A have been completed, insert the test wafer in drive B and continue with the speed tests.

18. The ff mode time period for drive B is measured and displayed.

Finally, those units that pass all the tests should be cleaned, wrapped and repacked. Put the 64K wafer in a polythene bag and pack in the end cheek.

WAFADRIIVE TEST PROCEDURE

- 1: Unpack, visually inspect unit & check contents.
FAIL if a). damaged or incorrectly assembled
b). manual missing
c). 64K wafer missing
- 2: Connect to computer, power up & initialise.
FAIL if a). damages computer
b). crashes computer
c). unable to initialise
- 3: Load 'Spectral Writer' program to drive A.
FAIL if a). wafer mechanically faulty
b). fails to load
c). loads but with "bad sector" report(s)
- 4: Load test program to drive A & run.
FAIL if a). program fails to load
b). loads but with "bad sector" report(s)
- 5: Check 'wafer present' detect on drive A.
FAIL if a). fails to detect presence of wafer
b). fails to detect absence of wafer
- 6: Check 'write protect' detect on drive A.
FAIL if a). fails to detect write protect status
b). fails to detect non write-protected status
- 7: Check 'wafer present' on drive B.
FAIL criteria as for (5) above
- 8: Check 'write protect' detect on drive B.
FAIL criteria as for (6) above
- 9: Format 64K wafer on drive B.
FAIL if a). wafer mechanically faulty
b). multiple bad sectors (more than 3)
- 10: Save/verify test on drive B.
FAIL if a). directory cannot be loaded
b). program cannot be verified
c). verifies but with "bad sector" report(s)
- 11: Verify file saved to B on A & load "standard" file.
FAIL criteria as for (10) above
- 12: Save/verify test on drive A.
FAIL criteria as for (10) above
- 13: Verify file saved to A on B.
FAIL criteria as for (10) above

14: Check printer interfaces.

FAIL if a). ZX Printer fails to operate
b). RS-232 port non functional
c). Centronics port non functional

15: Check drive A read/write speed. Note result as a percentage of normal and:

FAIL if outside 5% limit

16: Check drive A fast-forward (search mode) speed. Note result as a percentage of r/w speed and:

FAIL if less than 25% above r/w speed

17: Check drive B read/write speed.

FAIL criteria as for (15) above

18: Check drive B fast-forward speed.

FAIL criteria as for (16) above

FOR SALE

1. TS2068, TS2050 Modem, Oliger Disk Interface with A & B boards, Oliger Motherboard, TS2040 printer --- \$250.00
2. TS1500 with Tom Bent's ROM, Composite video board, A & J Microdrive 1000, 12 wafers, keyboard beeper, 16K Rampack -- \$110
3. Memotec Centronics Interface for TS1000 or TS1500 --- \$50.00

Willie Jones
10126 E. 33rd
Indianapolis, IN 46236
phone: 897-9225

TS1000, TS1016 RAMPACK, TS2040 Printer, 3 pieces of software and one book for \$40.00. Would be willing to trade. Make a nice present for someone.

Frank Davis
513 E. Main St.
Peru, IN 46970
phone: 473-8031

For those interested in robotics, the Hero Jr. Personal Robot is now priced at \$299.00 plus \$12 shipping and handling (normally for \$1078.85) from COMBO, 1405 Xenium Lane N, P.O. Box 32, Minneapolis, MN 55440-9176 or call toll-free: 1-800-328-0609.

WANTED: ~~to share software~~ or whatever. (Sinclair QL) ONTEL DIS-1500 Need boot disk manuals cheap! Mine has 720K floppy and 5 meg HD. Call Doug anytime 818-300-9220, 607 W. Live Oak, San Gabriel, CA 91776.

MARCH MEETING

This month's ISTUG meeting will take place on March 26, at the Eagledale Public Library, 3325 Lowery Rd., Indianapolis at 1:30 PM. This is one block east of Georgetown Road on 34th and Lowery. This is now our regularly scheduled meeting place. In order to keep this so, we do need to have good attendance, so I hope to see as many of you there as possible.

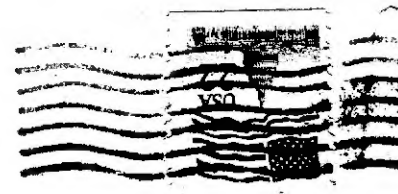
The April meeting will take place also at the Eagledale Public Library on April 30 at 1:30 PM.

Is there something you would like to see demoed, or a special computing problem solved? Let us know in advance and perhaps we can schedule a meeting on that topic. Anything is a possibility: Desk Top Publishing, using disk drives, using Stringy Floppies (Wafadrives, A&J 1000 or A&J 2000), getting your printer to do all it was advertised to do, adding memory to your QL, overheating of your TS1000 or QL, got a piece of software that will not load, etc. The User Group is yours to the extent that you use it. What I am saying is that we are more than just a newsletter and a few folks who get together and fly the breeze on Sinclair Computers.

We have the video tapes of the 1987 Midwest Timex Computer Show from Indy and the tapes from the Second Annual Northwest TS Mini-Fair. These tapes include all of the seminars at both shows, with the exception of Wm. Pedersens of Grand Rapids, MI. Let me know if you would like to see one of these lectures shown at a future meeting. If you would like to borrow them give me a call at 473-8031 and I will bring them to you at the next meeting.

ISTUG: Indiana SinclairTimex Users group, is a Not For Profit Group dedicated to the educational use of Sinclair and Timex-Sinclair Computers, for both the hobbyist and the professional user. We aim to do this by keeping members informed of sources for software, peripherals, computer shows, seminars and other educational events. We try to keep members aware of other sources of program listings and tips, by means of providing a newsletter 11 times a year for members, providing other newsletters obtained by user group swaps, and providing a library of programs that are public domain to all full members. Full membership \$10 ; Associate \$7.50 a year. Membership is offered in two ways: (1) Full membership, which entitles a member to all of the above, plus the full technical support of the other members on both hardware and software, and the opportunity to attend meetings which are held eleven times a year, usually on the 4th Saturday of the month at 1:30 P.M. On months when a major holiday falls that weekend, the meeting will be on the 3rd weekend. No December meeting. (2) Is Associate membership, which entitles you to the newsletter (in which any member may place free ads) and full support.

I. S. T. U. G.
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ISTUG MEETINGS FOR 1988

We now have a permanent meeting place for the rest of this year. They will take place at the Eagledale Public Library, 3325 Lowry Rd., Indianapolis, IN. This is one block east of Georgetown Road on 34th at 34th and Lowry; a map is enclosed in this issue. We have Paul Holmgren to thank for setting all of this up. Give him a call at 291-6002 if you have any questions. We have exact dates, still on Saturdays and still at 1:30 P.M., listed below and we will be using the meeting room at the library. See you there!

Feb. 27	Aug. 27
Mar. 26	Sept. 24
Apr. 30	Oct. 29
May 21	Nov. 26
June 25	Dec. 31
July 30	

~~--- This gives us an option to have a December meeting if there is enough interest in the idea. At any rate, this can be discussed at a later time.~~

FREE WANT ADS

- (1) FOR SALE, 1 PC8300, with 16K RAM Pack, 120 volt adaptor and instruction manual in English! All for \$25.00, or to trade with a 1000/2068/Spectrum hardware add on. See me at the February ISTUG meeting or write to Mike Felerski, 2110 1/2 Parnell Ave., Ft. Wayne, IN 46805.
- (2) Programs for the TS1000, TS2068 and the QL, quality tapes and microdrive cartridges used. Done by a Mechanical Engineer with over 30 years experience on high-technology assignments. All instructions on-screen, no wordy booklets to study. Easy to use and very fast. Programs are in Engineering, Mathematics and Games. Shipping is 1st Class Postage and included in price, with free technical advice. Send a large SASE for list of programs to: Frank Lockhart-BSME, P.O. Box 1131, Shelby NC 28150 or phone (704) 484-8539.
- (3) I have a TS1000 and I am looking for software. I am looking for information on the memory, I want to upgrade to a 64K so a schematic or where to buy one will help. I have 31 programs to trade or share. Raymond D. Pierce, Route 1 Box 185, Becida, MN 56625. 1-218-854-7472.
- (4) Jack Dohany- has his latest FAIRWARE NEWS catalog ready now and is taking the next year out from his regular occupation to work on writing and selling software for his favorite computer the TS2068. He now has set prices for the programs and requests you send \$1 and a self addressed stamped envelope for whenever you want his latest revision. He now supports all 2068 mass storage devices except RAMEX and is looking for a used ZEBRA disc system. Jack Dohany, 390 Rutherford, Redwood City, Ca 94061. 415-367-7781.

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